REMARKS

As can be determined from the prior art cited of record in the Office Action and brought to the attention of the Patent Office by applicant, this is a relatively crowded field where a number of large international companies are seeking to provide improvements to realize cost savings and to be competitive.

Obviously maintaining an acceptable service life for a high pressure discharge lamp is important by decreasing a lamp breakdown voltage while keeping a compact configuration at a relatively low weight. The present invention provides an improvement in such high pressure discharge lamps while enabling a discharge to be initiated with a fairly low voltage pulse.

The present invention further reduces the breakdown of voltage by spirally winding a proximity conductor in a given range without having a closed loop, thereby facilitating generation of a high-frequency magnetic field prior to the lamp lighting.

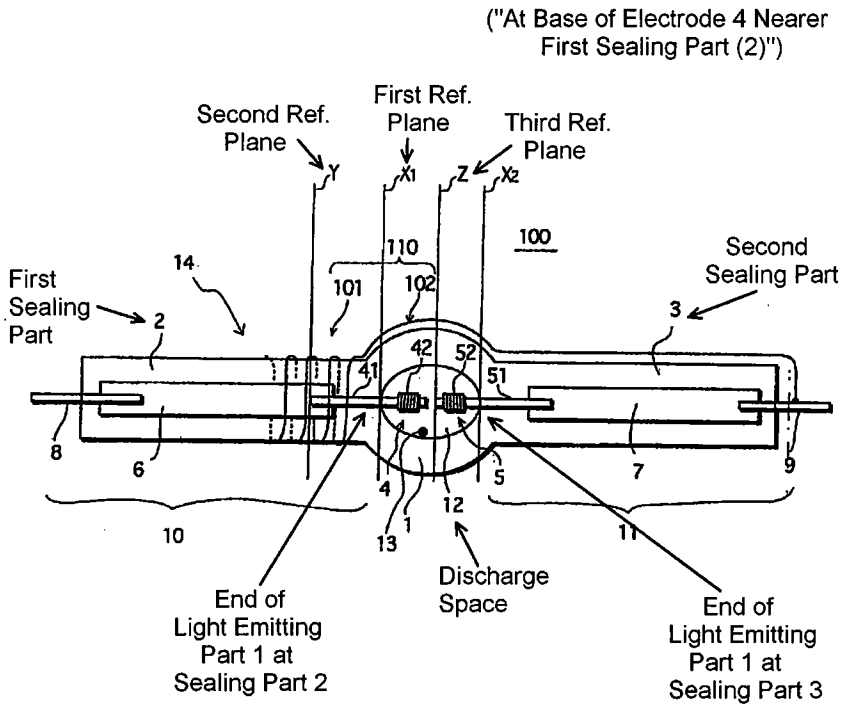
Claims 1, 4 and 12 were still rejected as being anticipated by the U.S. Patent Publication 2001/0003411 to *Honda et al.*

Honda et al. is directed to a light emitting bulb having a discharge medium in a light transmissive ceramic discharge enclosure with a first metallic coil tightly wound on an outside surface of at least one of the small-diameter portions in which a first electrode is inserted and coupled to the same potential as a second electrode.

Claim 1 defines a first reference plane lying orthogonal to the bulb in a longitudinal direction and including an end of the discharge space positioned at a section, having the greatest curvature, of an inner surface of the light emitting part at a base portion of electrode near the first sealing part.

As can be appreciated, our claimed light emitting part 1 is a spheroid envelope which seals our tungsten electrodes 4 and 5 within the closed discharge space 12. The sealing part 2 and the sealing part 1 seal the respective electrodes 4 and 5 to define the discharge space. A first reference plane X_1 and corresponding similar reference plane X_2 are located at the interface of the electrode and discharge space spheroid space as can be seen from the following Figure 1 near the first sealing part and second sealing part.

FIG. 1



Our Claim 1 clearly defines a bulb with a light emitting part 1 and electrodes 4, 5 are disposed within a discharge space 12 formed therein and a first sealing part 2 and a second sealing part 3 defining the respective ends of the light emitting part.

As can be readily understood, *Honda et al.* is incapable of teaching such a structure since it clearly defines a gap g, which permits the accumulation of a "liquid-state discharge agent 5."

Thus, *Honda et al.* fails to disclose the same reference planes, X_1, X_2, because it intentionally provides a small gap g, to accommodate a liquid-state discharge agent 5 as follows:

> [0108] Further, the discharge agent comes and goes through the narrow gap left between the metallic coil and the small-diameter cylinder, and stays there in a liquid-phase during the lighting of the lamp.
>
> * * *
>
> [0072] In the high-intensity discharge lamp according to this aspect of the invention, the electrode extends through the small-diameter cylinder in leaving narrow gaps between the electrode and the inside surface of the small-diameter cylinder. The discharge agent in the liquid-phase stays in the narrow gaps during a stable lighting. And the surface or the interface of the liquid-phase discharge agent becomes the coldest portion which determines the vapor pressure of the discharge agent. However, in a glow discharge operation, the discharge agent staying in the narrow gap temporarily evaporates. It is desirable that the discharge agent evaporates within a proper time at a starting operation.

Accordingly, the sealing for finally defining a light emitting part of the bulb in *Honda et al.* are at the location of the respective sealants 4. Thus, it is respectfully submitted that the light emitting part of *Honda et al.* includes not only the enclosure 1a, but also the pair of small diameter portions 1b further defined by the sealant 4 which is defined as follows in *Honda et al.'s* specification:

> [0160] The light-transmissive ceramic discharge enclosure 1 is provided with an enclosure 1a, and a pair of a small-diameter portions 1b, 1b.
>
> [0161] The enclosure 1a is almost [a] ball whose both ends are shrinked by smooth curved surface.
>
> [0162] The small-diameter cylinder 1b is coupled to the enclosure 1a by a smooth curved surface so as to integrally form the light-transmissive ceramic discharge enclosure 1.

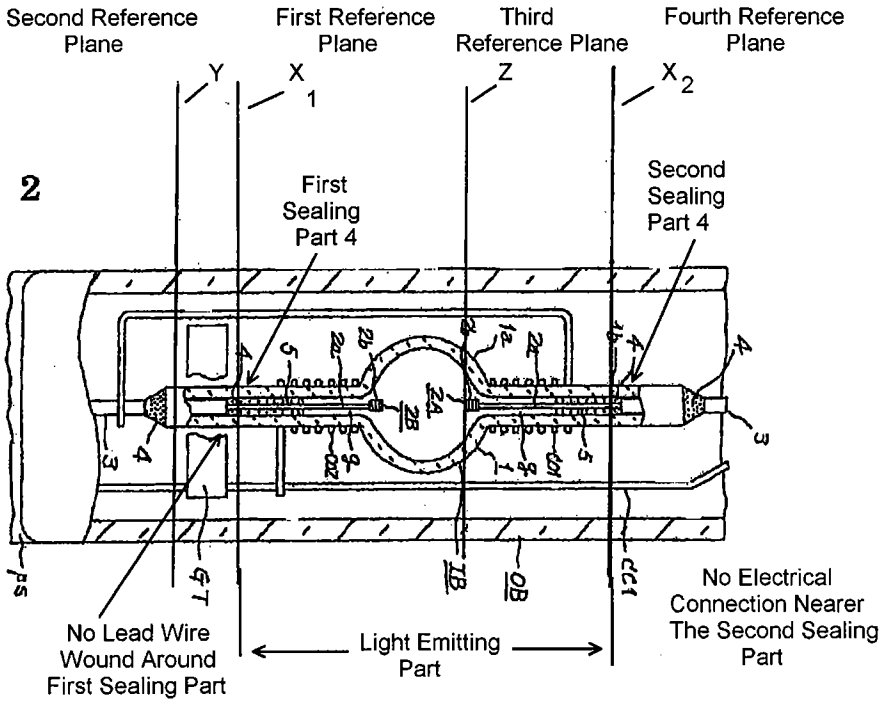
As can be readily appreciated, there is a basic misconstruction of what *Honda et al.* would teach to a person of ordinary skill in this art as a light emitting part since it clearly defines

its light emitting part as the light-transmissive ceramic discharge enclosure that includes the enclosure 1a and the small-diameter portions 1b.

The first and second sealing parts are the sealants 4 at the ends of the respective 1b small-diameter cylinders.

Since the sealant portions 4, as shown in Figure 2, are at the ends. There is not a proximity conductor formed from a lead wire wound around an outer circumference of at least one of the first sealing part with that same lead wire forming a lead portion to extend from the wound portion across the light emitting part to a side of the discharge lamp in which the second sealing part is disposed. *Honda et al.'s* sealing parts 4 are only at the far end of each cylindrical ceramic tubes 1b in the form of sealants 4, as follows.

FIG. 2



In defining an invention, a difficulty arises in using a two-dimensional verbal definition to represent a three-dimensional invention. To provide protection to an inventor and notification

to the public, a proper interpretation of terms utilized in the claims must be adhered to in order to enable an appropriate evaluation of the invention and its scope relative to cited prior art.

Thus, not only should the concept of the invention be found in the prior art of *Honda et al.*, but further, any cited structural elements in *Honda et al.* should be performing the same function with the same technical understanding to a person of ordinary skill in the field as the invention claims at issue.

As noted in *In re Saitco Surface, Inc.*, 603 F.3d 1255, 1260-1261 (Fed. Cir. 2010):

> The PTO's construction here, though certainly broad, is unreasonably broad. The broadest-construction rubric coupled with the term "comprising" does not give the PTO an unfettered license to interpret claims to embrace anything remotely related to the claimed invention. Rather, claims should always be read in light of the specification and teachings in the underlying patent. *See Schriber-Schroth Co. v. Cleveland Trust co., 311 U.S. 211, 217, 61 S. Ct. 235, 83 L. Ed. 132, 1941 Dec. Comm'r Pat. 802 (1940)* ("The claims of a patent are always to be read or interpreted in light of its specifications.").

Additionally, *Honda et al.* teaches in Paragraph [0093] that the coils wound around the small-diameter cylinder 1b, should be as tight as possible and notes that if the coils touch each other between turns, there would not be a problem.

> [0093] In this aspect of the invention, if the winding pitch exceeds 500%, it will become somewhat difficult to wind a coil on the small-diameter cylinder not only in tight as much as possible, but also preventing looseness of coils after windings. Further, though the coils touch each other between turns next to when the winding pitch is 100%, it cannot be the problem especially.

However, if the adjacent coils touch each other, a short circuiting occurs at those contact points and a plurality of closed loops are then formed around the small-diameter tube. Consequently, a high-frequency magnetic field cannot be effectively generated in such an environment.

Clearly the *Honda et al.* reference is not teaching nor reproducing the same effect with the same structure of our invention, nor does it even recognize and teach the features of our present invention.

The function taught by *Honda et al.* is as follows. The metallic coil is formed around an outer circumference of the small-diameter cylinder lb corresponding to where the narrow gap g is. By making a potential of the metallic coil the same as that of the other electrode, an electric field can be generated between the metallic coil and the axis portion of the electrode around which the metallic coil is wound [0098]. Thus, initial electrons in the narrow gap g are increased so that the discharge is easily generated between the electrodes [0103].

According to this technical idea, from the standpoint of enlarging an area influenced by the electric filed of the narrow gap g, it may be desirable to increase the winding pitch of the metallic coil. However, even if adjacent turns of the coil touch each other and thereby reduce the winding pitch, merely the winding number should be increased. Thus, the winding pitch does not matter in the *Honda et al.* [0092, 0093].

Usually a proximity conductor was provided in order to generate an electric field in the narrow gap g communicating the discharge space and thereby increasing initial electrons to lower the breakdown voltage. In view of the conventional practice, therefore, *Honda et al.* would not be applied to a sealing part directly provided adjacent to a spheroid light-emitting part, as with the high-pressure discharge lamp of the present invention.

Our sealing part of the present invention is sealed to be solid rather than being hollow so that there is no space to be the "narrow gap." Hence, if an electronic field is generated as described in *Honda et al.*, generation of initial electrons cannot be expected. Therefore, those skilled in this art will not follow a teaching that could result in an increase in production cost.

Since those skilled in the art could not appreciate the operational effect caused by the high-frequency magnetic field from *Honda et al.*, even those skilled in the art would not use such a costly metallic coil of the reference as a trigger wire, in the manner of our present invention whose sealing part is sealed solid.

As described above, a principle to promote a discharge with the use of a high-frequency magnetic field is not found in *Honda et al.*

Our Claim 1 defines the discharge space positioned at a section having the greatest curvature of an inner surface of a light emitting part at the base portion of the electrode nearer the first sealing part.

Applicant appreciates the Examiner's provision of a drawing on Page 2 but this arbitrarily selects a position G in the midst of the metallic wound coils by disregarding the claim language "nearer the first sealing part".

The case of *Power-One, Inc. v. Artesyn Technologies, Inc.* 599F.3d1343, 1349 (Fed.Cir.2010) is directly on point as to interpreting our claim language "nearer" as follows:

> The intrinsic record supports the district court's construction, and despite Artesyn's contention, the terms "adapted to" and "near" are not facially vague or subjective. Claims using relative terms such as "near" or "adapted to" are insolubly ambiguous only if they provide no guidance to those skilled in the art as to the scope of that requirement. *See Datamize*, 417 F.3d at 1347 (the definiteness of a claim's terms depends on whether those terms can be given a reasonable meaning by a person of ordinary skill in the art); *see, e.g., Young*, 492 F3.d at 1346 ("near" not indefinite); *Central Admixture Pharm. Servs., Inc. v. Advanced Cardiac Solutions*, 482 F.3d 1347, 1356 (Fed.Cir.2006) ("Adapted to" not indefinite); *Verve, LLC v. Crane Cams, Inc.* 311 F.3d 1116, 1120 (Fed.Cir.2002) (same). Here, a person of ordinary skill in the field would understand the meaning of "near" and "adapted to" because the environment dictates the necessary preciseness of the terms.

Additionally, the Office Action contends that a section having the greatest curvature of the inner surface of the light emitting part could be moved closer to the electrode tip. This was "the basis for the rejection provided below." Our claim does not use the terminology "radius of curvature," but specifically defines a greatest curvature.

A curvature shows a curving amount of a curved line or a curved surface. For example, the curvature of a circumference whose radius is r is *l*/r, and the greater the curving amount, the greater the curvature is (cf. "Curvature" in Wikipedia).

Paragraph 0184 of *Honda et al.* describes a gap g with 0.25 mm width. The curving amount is the greatest (i.e., the curvature is the greatest) at the curvature 2, in the reference figure, where the gap g is filled.

Accordingly, when the curvatures 1 and 2 are compared with each other based on the reference Figure 2 and 3, the curvature 3 with the greater curving amount is greater than the curvature 1.

Thus, "a section, having a greatest curvature, of an inner surface of the light emitting part is at a base portion of the electrode nearer the first sealing part" recited Claim 1 of the present; invention corresponds to the curvature 2 in *Honda et al.* as can be seen as follows:

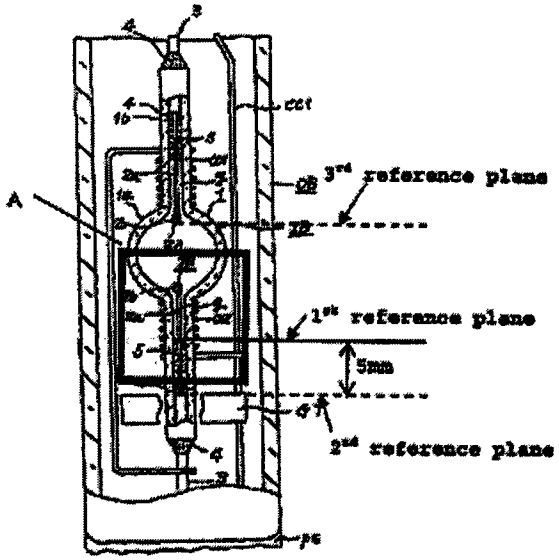
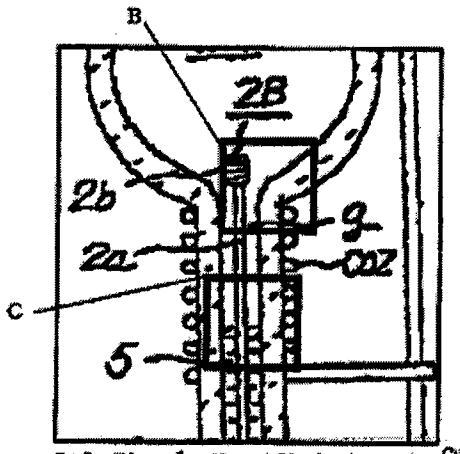
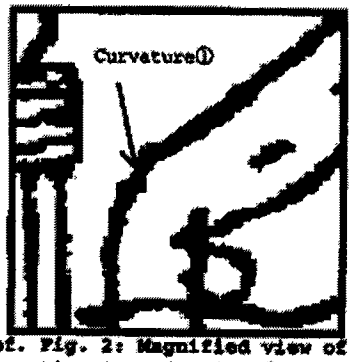


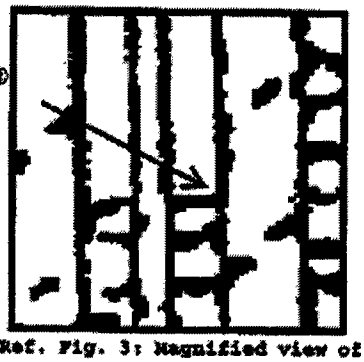
Fig. 2



Ref. Fig. 1: Magnified view of A section in Fig. 2



Ref. Fig. 2: Magnified view of B section in Ref. Fig. 1



Ref. Fig. 3: Magnified view of C section in Ref. Fig. 1

Honda et al. discloses: a light-emitting bulb having a discharge medium in a light-transmissive ceramic discharge enclosure; and a first metallic coil that is wound on the outside surface of at least one of the small-diameter portions through which the first electrode is inserted and that is coupled to have the same potential as the second electrode.

However, we define in Claim 1, "a closed loop, encircling the light emitting part or the first sealing part, does not exist within the range between the 2nd reference plane and the 3rd reference plane." Such a closed loop generates the magnetic field that offsets high-frequency magnetic field and directly affects the discharge space. Therefore, without such a closed loop within the range, the effect of lowering the breakdown voltage is not achieved.

The metallic coil of *Honda et al.* has a closed loop encircling the light emitting part or the first sealing part. More specifically, the closed loop is formed, in the range between the 2nd reference plane and the 3rd reference plane, at the end of the metallic coil extending to the junction conductor CC1. According to the high-pressure discharge lamp disclosed by *Honda et al.*, because the closed loop is formed, the breakdown voltage cannot be lowered.

The Office Action further rejected Claim 3 as being obvious over the *Honda et al.* publication in view of the Japanese Laid-Open Application JP58-198327 to *Danno et al.*

As can be appreciated, the *Danno et al.* reference is not capable of rectifying the deficiencies in the *Honda et al.* reference.

Finally, Claims 8-11 and 13 and 14 were held to be obvious over the same *Honda et al.* publication.

All of the remaining claims depend from Claim 1 and applicant has pointed out the inability of *Honda et al.* to teach the features specifically of Claim 1, let alone rendering obvious

our present invention when *Honda et al.* is not even directed to the same improvement of our present invention, nor would it suggest this improvement to anyone of ordinary skill in this field.

It is believed that applicant has more than adequately defined the allowable subject matter of our current claims and requests an early notice of allowance.

Alternatively, applicant requests that our Amendment be entered for purposes of appeal.

If the Examiner believes a telephone interview will assist in the prosecution of this case, the undersigned attorney can be contacted at the listed phone number.

Very truly yours,

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